

Antimicrobial Resistance: Misconceptions and Misuse of Antibiotics in Malta

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*Antimicrobial resistance is a pressing global health challenge, and Malta is no exception. **Gavin Schranz**'s recent research has identified critical misconceptions about antibiotic use among the Maltese public which lead to improper practices, contributing to a global health crisis.*

According to the European Commission's predictions, antimicrobial resistance (AMR) could cause up to 10 million deaths per year by 2050 if preventive measures are not implemented. This would be the equivalent of losing 27,400 people every single day. But what exactly is AMR, and how has it become such a major concern?

According to the World Health Organization, AMR occurs when microorganisms such as bacteria, viruses, fungi, and parasites evolve to resist the effects of medications designed to kill or inhibit them. In other words, they become resistant and survive even when exposed to medications, making infections harder to treat and increasing the risk of severe illness, disease spread, and death.

COMMON MISCONCEPTIONS ABOUT ANTIBIOTIC USE

It is now known that microorganisms develop resistance through genetic mutations or by acquiring resistance genes from other microbes. This can occur naturally but is accelerated by human actions such as misuse or overuse of antibiotics, incomplete courses of treatment, overuse of antibiotics in livestock and agriculture, and poor infection control and hygiene practices.

One of the most prevalent misconceptions is the belief that antibiotics are effective against viral infections, such as the common cold or flu. This misunderstanding leads to the unnecessary use of antibiotics, which can fuel resistance. Another issue is the misuse of leftover antibiotics –

a practice where individuals self-medicate without proper medical guidance, potentially exacerbating AMR.

These misconceptions are not unique to Malta, but they are particularly pronounced due to cultural and systemic factors. For example, the 2022 Eurobarometer on antibiotic consumption revealed that Malta had one of the highest use rates in Europe. This pattern is partly attributed to Mediterranean cultural norms, where antibiotics are often seen as a precautionary measure to prevent illnesses from worsening. Additionally, some general practitioners may feel pressured to prescribe antibiotics to avoid losing patients who expect a quick fix.

Gavin Schranz, an M.Sc. Digital Health graduate from UM, explains that people's decisions about antibiotic

use are shaped by three key factors: what they know, what's available to them, and what they believe. 'Many misuse antibiotics simply because they don't fully understand when they are necessary,' he notes. 'Others take them out of convenience – using leftover antibiotics at home or obtaining them easily from a friend or family member. Cultural habits also play a role, as some patients expect a prescription whenever they visit a doctor, even when antibiotics aren't needed.' Addressing AMR effectively, therefore, requires more than just raising awareness; it demands a shift in prescribing practices and public attitudes toward antibiotic use.

As a patient advocate and researcher, Schranz has worked on an unconventional approach to bring awareness of the AMR crisis to the public and educate them interactively. Supervised by Dr Ermira Tartari Bonnici from UM's Faculty of Health Sciences and Dr Vanessa Camilleri from UM's Faculty of ICT, he conducted a public survey involving 476 participants to assess knowledge of antibiotic use and resistance.

Before designing the survey, Schranz conducted interviews with experts across multiple disciplines – including pharmacy, microbiology, infection prevention and control, surgery, public health, primary care, epidemiology, and agriculture – to gain a deeper understanding of the root causes of antibiotic misuse and the barriers to AMR education. Experts highlighted key priorities such as the need for clearer public health messaging, better communication between doctors and patients, and stronger regulations around antibiotic prescribing.

The survey showed that, while many people knew antibiotics should be taken as prescribed, self-medication remained common due to convenience and cost. Schranz also discovered that



Presenting at STYPA (an event organised by the European Patients Forum) in Brussels to a group of patient advocates discussing antimicrobial resistance
Image courtesy of Gavin Schranz

there is still the belief that antibiotics are effective against viral infections, with 34% of people believing it was acceptable to use antibiotics to cure fevers and 40% sore throats. Additionally, 70% of respondents were unaware of what AMR truly entails, mistakenly believing that it occurs when the body becomes resistant to antibiotics, and they no longer work as well. In reality, AMR occurs when bacteria and other microbes, not the body, become resistant to treatment.

Are these misconceptions due to a lack of care? 'I do not believe so,' emphasises Schranz. 'Unless people have lived through it themselves or had a loved one who did, the urgency just isn't there. They don't know that it is a major issue because they don't hear that someone died from antibiotic resistance; they hear it was post-surgery complications, pneumonia, sepsis, organ failure, or a bloodstream infection. But in many cases, these aren't just complications – they're the result of infections that antibiotics could no longer treat. That's what makes AMR a silent and invisible threat.'

ADDRESSING MISCONCEPTIONS AND COMBATING ANTIMICROBIAL RESISTANCE

Schranz's findings have informed the development of a digital tool to address these misconceptions and combat AMR, with public education being the cornerstone of these efforts.

'In collaboration with a group of undergraduate AI students, we developed an e-learning tool aimed at educating the public about antibiotics and their proper use, based on knowledge gaps identified in the survey,' he explains. The tool is designed to be interactive and accessible, particularly for those with lower health and digital literacy.

This e-learning tool incorporates features such as an interactive chatbot, which allows users to anonymously ask questions about antibiotics, and a detailed explainer module. For example, users can input their prescribed antibiotic, and the tool will provide instructions on correct usage. It also includes a quiz to reinforce learning and a map showing the nearest pharmacies and healthcare providers. Being designed to meet public needs, this tool can have several applications, from use in tertiary schools to integration with governmental health portals.

'Patient-doctor communication also needs to improve,' highlights Schranz. 'Clear communication by general practitioners is crucial in helping patients understand when antibiotics aren't needed and exploring alternative treatment options together.' Engaging patients in these conversations can be essential for better public understanding and adherence to proper antibiotic use.

In addition to these tools, simple actions can make a significant difference. Washing hands effectively is one of the most impactful ways to prevent the spread of infections. Avoiding antibiotics for colds and >

Left: Hospital tags from multiple hospitalisations due to infections caused by antimicrobial-resistant bacteria



Right: Post-surgery recovery in 2016 with brothers and sister, highlighting personal experiences with antibiotic-resistant infections



Images courtesy of Gavin Schranz

flu, as well as refraining from sharing antibiotics with others, are also critical measures.

This focus on practical solutions led the researcher to be invited to present at STYPA 2024 in Brussels, where he discussed the importance of patient involvement in developing digital health tools.

A PERSONAL PERSPECTIVE


‘This research is deeply personal for me,’ explains Schranz. Having been born with chronic kidney disease, he underwent numerous surgeries, some of which led to infections that were resistant to first-line antibiotics. ‘Ironically, it’s not the kidney disease that caused my biggest problems over the years, but the infections that resulted from the necessary surgeries to treat my kidney disease.’

However, this concern is not restricted to people with chronic

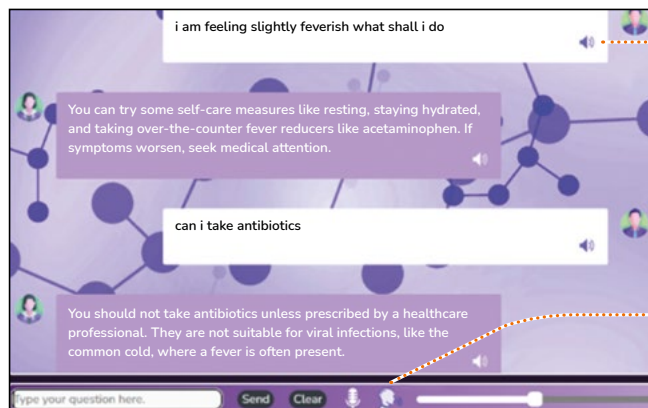
conditions. Resistance to antibiotics can happen to anyone. According to the World Health Organization, if AMR continues unchecked, even routine medical procedures such as organ transplants and chemotherapy could become impossible due to the lack of effective antibiotics. Schranz’s battle with antibiotic resistance is far from over. In the coming months, he faces multiple surgeries, including a kidney transplant. ‘Every operation comes with a risk of infection, and without effective antibiotics, routine operations become dangerous,’ he says. His story is a stark reminder of why protecting these medicines is so important.

‘I plan to continue speaking out and advocating to ensure that everyone is aware of this problem. My hope is that the insights from my work will inspire unconventional approaches to public education and engagement,’ he says. ‘By using interactive digital tools

and supporting a culture of informed antibiotic use, we can combat AMR more effectively.’ While this is a global challenge, each country, including Malta, has a role to play in curbing this silent pandemic.

Through continued research, advocacy, and collaboration, we can safeguard the effectiveness of antibiotics for future generations. It’s not just about addressing misconceptions; it’s about changing behaviours and ensuring a healthier tomorrow for all. If you want to learn more about AMR worldwide and the ongoing global actions to address it, more information can be found by scanning the QR code below. 

This research will be presented at the Congress of the European Society of Clinical Microbiology and Infectious Diseases, Vienna and the Future of Information and Communication Conference, Berlin, both in April 2025.



Text to Speech Functionality

Text Box Input Field

Send & Clear Buttons

Speech to Text Functionality

Volume Slider

Left: Example of a chatbot conversation between a patient and the e-learning tool designed to improve public understanding of antibiotic use
Image courtesy of Gavin Schranz



